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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,979	03/27/2002	Georg Denk	1454.1205	5783

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EXAMINER

THOMPSON, ANNETTE M

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/009,979

Applicant(s)

DENK, GEORG

Examiner

A. M. Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 February 2005 thru 25 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 11-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 01/14/05.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection on 02 February 2005. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 25 February 2005 has been entered.
2. Applicant's amendment has been examined. Claim 12 is amended. Claim 26 is added. Claims 11-26 are pending.

### ***Claim Objections***

3. Claims 18, 23, 24 are objected to for the following reasons: Pursuant to **claim 18**, at line 3, after "capacitance", insert semicolon (;). Pursuant to **claim 12**, delete "in each case". Pursuant to claim 20, at line 2, change "the same" to - -a same- -. Pursuant to **claim 24**, at line 1, after "program", delete "to control a computer to perform" and insert - -which when executed by a computer performs- -. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the **first** paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. **Claims 11-25** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Pursuant to claims 11, 24 and 25, Applicant's specification lacks support for "adding a chargeable dynamic element at each node of the circuit."

6. The following is a quotation of the **second** paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 11-24** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Pursuant to claims 11 and 24, the omitted structural cooperative relationships are: the relationship between adding a chargeable dynamic element at each node of the circuit and the charging method for the parallel calculation of the operating point. Claims dependent from these rejected claims (**claims 12-23**) are likewise rejected.

8. Claim 12 is also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Pursuant to claim 12, it is unclear what "in each case" references and how this phrase relates to the other claim limitations.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Rejection of claims 11-25**

10. Claims 11-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Ulrich Bretthauer et al. paper (the Bretthauer paper) entitled BRASIL: The Braunschweig Mixed Mode-Simulator for Integrated Circuits in view of the H. Spiro paper (the Spiro paper) entitled Simulation of Integrated Circuits. The Bretthauer paper discloses the parallel calculation of an operation point as part of its simulation algorithm but does not specifically disclose the use of the charging method. The Bretthauer paper merely discloses at page 4, column 2, that an operation-point analysis has to be performed. The Spiro paper teaches the use of the charging method in the parallel calculation of the operating point. It would have been obvious to one of ordinary skill in the art to use the Spiro paper method of simulation using the charging method with the Bretthauer paper simulation algorithm to achieve rapid and accurate convergence.

11. Pursuant to claim 11, the Bretthauer paper discloses the parallel calculation of the operating point comprising partitioning the circuits into a number of partitions (the Bretthauer paper, § 4. Coupling of the simulation algorithms); using the charging method for the parallel calculation of the partitions (the Spiro paper); adding a

chargeable dynamic element at each node of the circuit (Bretthauer paper, § 4. Coupling of the simulation algorithms, column 2).

12. Pursuant to claim 12, wherein each circuit node is connected a predetermined value set by a capacitance (the Bretthauer paper, § 4. Coupling of the simulation algorithms, column 2) to calculate an operating point (the Bretthauer paper, § 4. Coupling of the simulation algorithms, column 2).

13. Pursuant to claim 13, wherein a capacitance having the same value is provided at each node of a partition (the Bretthauer paper, § 4. Coupling of the simulation algorithms, column 2; see also Figure 4).

14. Pursuant to claim 14, wherein each node of a partition is connected to the same potential by means of a capacitance (the Bretthauer paper, § 4).

15. Pursuant to claim 15, wherein a capacitance having the same value is provided at each node of all partition (the Spiro paper, translated, page 2, the Bretthauer paper, § 4. Coupling of the simulation algorithms, column 2; see also Figure 4).

16. Pursuant to claim 16, wherein each node of all partition is connected to the same potential by means of a capacitance (the Bretthauer paper, § 4).

17. Pursuant to claim 17, wherein the potential is connected to ground (see Figure 4).

18. Pursuant to claim 18, wherein the operating point of the circuit is calculated with a suitable step-by-step change in the value of the capacitance, and this step is repeated until the values of the capacitances are zero (the Spiro paper, translated, pages 3-4).

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19. Pursuant to claim 19, wherein each node of a partitions is connected to the same potential by means of a capacitance (the Bretthauer paper, § 4).

20. Pursuant to claim 20, wherein a capacitance having the same value is provided at each node of all partition (the Bretthauer paper, § 4. Coupling of the simulation algorithms, column 2; see also Figure 4).

21. Pursuant to claim 21, wherein each node of all partitions is connected to the same potential by means of a capacitance (the Bretthauer paper, § 4; the Spiro paper translation, page 2, ¶¶ 1,2 ).

22. Pursuant to claim 22, wherein the potential is connected to ground(see Figure 4).

23. Pursuant to claim 23, wherein the operating point of the circuit is calculated with a suitable step-by-step change in the value of the capacitance, and this step is repeated until the values of the capacitances are zero (the Spiro paper).

24. Pursuant to claim 24, which recites a computer readable medium (Bretthauer paper Abstract), storing a program to control a computer to perform a method for parallel calculation (this limitation is implicitly incorporated as part of the simulators disclosed in the Brasil paper and the Bretthauer paper as circuit simulators function with computer readable media); the method comprising partitioning the circuits into a number of partitions (the Bretthauer paper, § 4 ); using the charging method for the parallel calculation of the partitions (the Spiro paper); adding a chargeable dynamic element at each node of the circuit (Bretthauer paper, § 4; Coupling of the simulation algorithms, column 2).

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25. Pursuant to claim 25, which recites a computer aided method for parallel calculation of the operation point of an electrical circuit (Bretthauer paper Abstract) comprising partitioning the circuits into a number of partitions (the Bretthauer paper, § 4. Coupling of the simulation algorithms); using the charging method for the parallel calculation of the operating point for individual partitions (the Spiro book/paper translation § 7.3, page 1, wherein the charging method uses the dynamic elements such as capacitances existing in an electrical circuit for calculating the operating point via a pseudo-transient analysis); adding a chargeable dynamic element at each node of the circuit (Bretthauer paper, § 4. Coupling of the simulation algorithms, column 2), whereby an equal capacitance is provided at each node of a partition as the chargeable dynamic element (the Spiro book/paper translation § 7.3, page 2)

***Allowable Subject Matter***

26. Claim 26 is allowed.

27. The following is a statement of reasons for the indication of allowable subject matter: In a computer-aided method for parallel calculation of the operating point of an electrical circuit having nodes, the prior art does not disclose or suggest adding additional chargeable dynamic elements to the circuit for simulation purposes together with already existing dynamic elements.

***Remarks***

28. Receipt of the partial translation of the Spiro paper/book is acknowledged and Examiner is awaiting any additional pertinent translations consistent with Applicant's duty of disclosure under 37 CFR 1.56.



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29. Applicant's argument regarding the addition of a chargeable dynamic element to each node of the circuit is indeed persuasive, however, the limitation of adding a chargeable element is not enabled by Applicant's specification. Therefore, Examiner has interpreted this limitation to be consistent with the Bretthauer paper's disclosure of the gates of MOS transistors in the area of circuit simulation being treated as constant capacitors (§ 4), i.e. treating the transistor element as a capacitor is tantamount to adding a capacitor, and accordingly, rejected this limitation.

***Conclusion***

30. Any inquiry concerning this communication or earlier communications should be directed to Examiner A.M. Thompson whose telephone number is (571) 272-1909. The Examiner can usually be reached Monday thru Friday from 8:00 a.m. to 4:30 p.m..

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

31. Responses to this action should be mailed to the appropriate mail stop:

Mail Stop \_\_\_\_\_

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Application/Control Number: 10/009,979

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or faxed to:

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